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Crops Divn.
Ft. Detrick, Md. 21701
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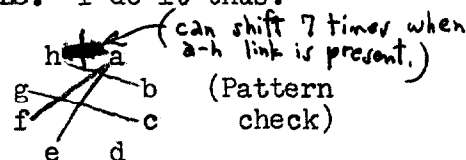
Memo to Notationers:

Dr. Joshua Lederberg has called my attention to the fact that we seem to be dealing with "Hamiltonian Circuits" in our locant paths. We might see some additional clarifications by a fairly exhaustive (is it?) checkout of all possible locant paths, forward and backward, in the very elementary form of a trigonal prism, made asymmetric by the addition of one point on a parallel edge, and a second point on an opposing side.

Thirty locant paths are drawn on the attached diagram. Those that are "counted" in three rings (in completing order of rings!) are circled and underlined in the "dictionary definitions" of loop-forming pairs.

Each "Hamiltonian circuit" (if that is the proper name) can be analyzed completely from JUST ONE DIAGRAM, CHOSEN TO EMPHASIZE SYMMETRY AND THEREBY AVOID UNNECESSARY DUPLICATION OF TRIALS. I do it thus:

Path #1:	LINK	RING	NOTATION
	ae	abcde	a5
	af	aef	a3
	gc	abcfg	a5
	bh	bcgh	b4



Check: a₃ b₃ c₃ d e₂ f₂ g₂ h = 17 (sum of ring numbers)
a & a & a & b = 5 (locant sum)

I feel very strongly that our task is to analyze the circuits, not draw various kinds of diagrams. I like to draw, but computers cannot sketch this abstract topological information exactly as we do.

Hoping this stimulates some progress at Detroit!

Hastily,

Bill

30 "HAMILTONIAN CIRCUITS" IN 8-POINTED TRIANGULAR PRISM

Nonconsecutive links identify each pattern. Locant sum is shown in lower right.
(Alphabetic order is reversed if cited locant is not the lowest in formed ring.)

1 <u>ae af gc bh</u> 5	2 <u>ae af hb hd</u> 5	3 <u>bd af gc ah</u> 5	4 <u>be ag ah hd</u> 5	5 <u>ae af gc hd</u> 6	6 <u>ae ag hc hd</u> 6
7 <u>ae cf ah hb</u> 6	8 <u>ce af ah hd</u> 6	9 <u>cf ag ah hd</u> 6	10 <u>ac af dg hb</u> 7	11 <u>ae df ah hc</u> 7	12 <u>ae dg ah hb</u> 7
13 <u>ae fb hc hd</u> 7	14 <u>bf ag hc hd</u> 7	15 <u>ce af gb hd</u> 7	16 <u>ce bg ah hd</u> 7	17 <u>ac af hb eh</u> 8	18 <u>ac dg bf ah</u> 8
19 <u>ad fb eg ah</u> 8	20 <u>ae df gb hc</u> 8	21 <u>ae df bg ah</u> 8	22 <u>ac bf eh ah</u> 9	23 <u>ad fb eg hc</u> 9	24 <u>bd af gc eh</u> 9
25 <u>ad ag hc fh</u> 9	26 <u>bf eg ah hc</u> 9	27 <u>be ag hc fh</u> 10	28 <u>ad cg ah fh</u> 11	29 <u>bd cg ah eh</u> 11	30 <u>be gc ah fh</u> 11